Dzero Cryogenic Auto Dialing Alarm System

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D0 KAYE AUTO DIALING ALARM SYSTEM

Overview: The Automatic Dialing system purchased by D0 is intended to help make the D0 cryogenic system operate unattended by cryogenic operating personnel. The auto dialer is completely programmable and is voice synthesized. The auto dialer was purchased with 32 bistable inputs, but is expandable to 64 bistable inputs with the purchase of more electronic cards at an approximate cost of $260 per card(8 bistable inputs). The auto dialer also has the capability for analog inputs, analog outputs, and bistable outputs none of which D0 uses or intends to use. The auto dialer can be called on its' operating phone line to describe current alarms with the proper password. The Auto Dialer can dial lab extensions, lab pagers, and any number outside the lab. It cannot dial a long distance pager.

Operation: The auto dialer monitors alarms and alarm conditions via the TI565 PLC, upon an alarm condition it initiates a phone calling sequence of preprogrammed lists with assigned priorities. When someone is reached, the auto dialer describes the individual alarm it is calling for, by a preprogrammed set of words for that individual alarm, spoken by a female voice. The called person then has a chance to acknowledge the alarm over the telephone, if the alarm is not acknowledged the auto dialer will disconnect and call the next person on the list. The auto dialer will continue to cycle through the list until it is acknowledged, reset, or the alarm condition no longer exists.

Specifications:

Manufacturer:	Kaye Instruments, Inc.
	15 DeAngelo Drive
	Bedford, MA 01730
	617-275-0300
Service:	Ron Alphen x283
Model:	ADAS 3000 , x7950
Serial#:	006361
Power:	120 vac, 60 htz, 1 amp
	Internally Battery backed with charger
Fermilab extension#	x8065

Programmable Parameters:
1.   Individual alarm message(300 word internal library).
2.   8 lists of 8 telephone numbers. The lower the list #, the higher   the priority.
3.   The priority of each alarm channel, by assigning a list to it.
4.   Open/closed input on alarm.
5.   Each channel enable/disable.
6.   Station ID phrase.
7.   Incoming telephone ring count.
8.   Real time clock.
9.   Message repeat count.
10.   Intercall Delay (allowed acknowledge time of an alarm).
11.   Calling time of day.(time dialer is allowed to operate)
12.   Call back acknowledge delay.(delay between outgoing alarm   calls)
13.   access code.
14.   Bistable alarm delay.
15.   Power fail call cancel.
16.   Power fail time delay.
17.   Power fail calling assignment.

Programming: Programming of the auto dialer is done through the keypad inside the front cover. The auto dialer is internally battery backed, therefore programmed instruction are never lost even when the unit is switched off. Since there are many programmable parameters and the keystroke commands are extensive, the owners manual should be consulted when reprogramming. The manual can be found in the D0 cryogenic control room.

Alarm handling: Alarms are generated by the TI565 PLC. They can be of analog or digital nature. The analog and digital alarms are programmed into the ladder logic of the PLC. Both types of alarms are sent to the auto dialer by output isolated relay modules in the PLC I/O bases wired to the auto dialer inputs.
        The auto dialer alarms are controlled from operator graphic pages of the DMACS control software. These pages are password protected. The digital auto dialer alarms can be enabled/disabled from this graphic page. The analog auto dialer alarms can be enabled/disabled and their threshold triggering points can be changed from this graphic page.

Auto Dialer alarm acknowledging: When receiving an auto dialer alarm it can be dealt with in several ways.
1. Punch 8 on a touch tone phone after the message, to acknowledge.
2. Hang up call it back, enter the password, then acknowledge the   alarm. Fermilab x**8065**
3. Push the reset button on the auto dialer. **CAUTION: Doing this   puts all of the auto dialer alarms in the bypass mode   for the "bypass to run delay" time period.** This should   only be used temporarily to stop the outgoing calls from the   auto

dialer while you are assessing the alarm, because you will   not be notified by the auto dialer while in this mode, if another   auto dialer alarm is triggered. For longer term acknowledgment   for a particular alarm, it should be disabled.

4. The individual alarm that has been triggered can be disabled,   while assessing the alarm. This will disable the alarm to the   auto dialer also.

Kaye Auto Dialer Weakness: The Kaye Auto Dialing alarm system is designed to work on a touch tone dialing or a pulse dialing phone line. When it dials a number, the first digit is sent out as a tone. If there isn't a gap of a few milliseconds after the tone, the Auto Dialer assumes that the phone line is a pulse dialing line.

The Auto Dialer could not dial outside the Fermilab phone network because the Centrex phone system used is extremely fast. There is no gap in the dial tone after dialing a 9 to get an outside line. The Auto Dialer would then proceed to dial the number over using pulse dialing which would of course be the wrong number, since the first digit would be dialed twice. The Auto Dialer with a touch tone line, at Fermilab is limited to lab pagers and lab extensions.

This dialing problem was solved by having Illinois Bell change the phone line to a pulse dial only. Everytime the Auto Dialer dials a number it switches to pulse dialing after the first digit is dialed. Now that the first tone digit is invisible to the phone network, redialing of the number in pulse dialing works correctly.

The Auto Dialer can now dial lab pagers, lab extension, and any number outside the lab with a pulse dialing telephone line. The Auto Dialer cannot dial a long distance pager. The long distance pager requires a touch tone dialing system in order to work.

Currently Programmed Auto Dialer Messages:

CH #	Voice Synthesized Message
1.	L A R tank pressure high.
2.	L A R tank pressure low.
3.	L N 2 tank pressure high.
4.	L N 2 tank pressure low.
5.	L N 2 tank level low.
6.	Compressor air pressure low.
7.	Emergency air pressure low.
8.	C C tank pressure high.
9.	C C tank pressure low.
10.	C C I V pressure high.
11.	Cold valve pressure low.
12.	Temperature device cold.(Trough Temperature)
13.	O D H alarm.
14.	Air flow device failure. (Ventilation)
15.	U P S alarm. (Parameter Alarm)
16.	U P S power on. (Inverter On)

17.	I O base failure. (Blown Fuse)
18.	Air compressor failure. (Off)
19.	Air Treatment failure. (Air Drying System)
20.	Analog fault. (Transmitter Failure)
21.	North tank pressure high.
22.	North tank pressure low.
23.	North IV pressure high.
24.	Detector gas flow low.
25.	South tank pressure high.
26.	South tank pressure low.
27.	South IV pressure high.
28.	Building air flow failure.
29.	Unused.
30.	Unused.
31.	Unused.
32.	Unused.

DØ AUTO DIALER

◯ 8 CC PRESS HIHI	◯ 16 UPS INV ON	◯ 24 WAMUS FLOW LO	◯ 32
◯ 7 E/A PRESS LOLO	◯ 15 UPS ALARM	◯ 23 NEC IV HIHI	◯ 31
◯ 6 I/A PRESS LOLO	◯ 14 EXHAUST FANS FAIL	◯ 22 NEC PRESS LOLO	◯ 30
◯ 5 LN2 DEW LEV LOLO	◯ 13 ODH ALARM	◯ 21 NEC PRESS HIHI	◯ 29
◯ 4 LN2 DEW PRESS LOLO	◯ 12 TROUGH TEMP LOW	◯ 20 BROKEN TRANSMITTER SUM	◯ 28 COLL HALL VENTILATION FAILURE
◯ 3 LN2 DEW PRESS HIHI	◯ 11 PV219A CLOSE PRESS LOW	◯ 19 DRIERS FAIL TO SWITCH	◯ 27 SEC IV HIHI
◯ 2 LAR DEW PRESS LOLO	◯ 10 CC IV HIHI	◯ 18 I/A COMP OFF	◯ 26 SEC PRESS LOLO
◯ 1 LAR DEW PRESS HIHI	◯ 9 CC PRESS LOLO	◯ 17 I/O BASE FAILURE	◯ 25 SEC PRESS HIHI

CALL LISTS

CRYO
1) DM PAGE
2) RR PAGE
3) KK PAGE
4) CDF PAGE
5) DM HOME
6) RR HOME
7) KK HOME
8) DØ C.R.

WAMUS
1) DØ C.R.
2) CDF PAGE
3) KK PAGE
4) DM PAGE
5) JB HOME
6) RP HOME
7) KK HOME
8)

CURRENT SETTINGS

1) MESSAGE REPEAT=2
2) INTERCALL DELAY=60MINS
4) BYPASS TO RUN=60MINS
5) CALLING HOURS=24
6) ACCESS CODE=1,2,3,4
7) POWER FAIL MON=DISABLED
8) TIME BETWEEN CALLS=5MINS

PRIORITY

1) ODH
2) CC PRESS HH +LL
2) CC IV PRESS HH
3) ALL THE REST
4) WAMUS GAS SYS

TO ACKNOWLEDGE AN ALARM

1) ON PHONE PUNCH "8" WHEN ASKED FOR ACKNOWLEDGEMENT
OR
2) CALL UP BETWEEN OUT CALLS. (840-8065)WHEN THE LINE
OR   RINGS IT'S ACKNOWLEDGED
3) PUNCH "RESET"(PUTS IN BYPASS)
  DON'T FORGET TO PUT IN RUN MODE WHEN
  CONDITION CLEARS. IT WILL AUTOMATICALLY
    GO BACK TO RUN MODE IN 60MINS IF YOU DON'T.

CALL IN CODES

RUNMODE=(2,7)
BYPASS =(2,2)
PREVIOUS
  MODE =(2,3)
VERIFY =(*)
PROGRAM=(#)
DIAL OUT=(3)

TO PUT IN SERVICE PUNCH "RUN" ON KEYPAD